

Financing biodiversity: The Role of Financial Institutions

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Abstract

In this paper we focus on how private capital may be channeled into activities that conserve biodiversity. We study three related issues. We evaluate the *mechanisms for financing the environment* in general. This includes a discussion of the financing through the recognition of risks, as well as direct financing. We then turn our attention to the *current status of financing for biodiversity*. This includes a discussion of the instruments as well as the projects that are financed by such instruments. We present the constraints that inhibit financing of biodiversity. Finally we present some *suggestions on policy design for improving private financing of biodiversity* in India.

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1. Introduction

The debate over the adverse impact of climate change over the past several decades has also begun to focus on the role of biodiversity in providing critical support to life on earth. The term biodiversity includes measures such as the relative abundance of species in a community to the joint dissimilarity of a collection of species.¹ More formally, it is often defined as, *“the variability among living organisms within species, between species, and between ecosystems. Biodiversity underpins the proper functioning of ecosystems and ensures the delivery of ecosystem services.”*² The loss in biodiversity is a cause for concern as diversity in species supports stability and resilience of ecosystems, and can have adverse impacts on human societies and economic activity. For example, the economic costs of biodiversity loss and ecosystem degradation have been estimated to be between USD2 and USD 4.5 trillion (3.3-3.75% of global GDP).³

As with climate change, increased awareness has been followed by calls to action to preserve biodiversity and decrease the loss of species. The 2002 World Summit on Sustainable Development had agreed on a target of “a significant reduction in the current rate of loss of biological diversity”. The 2015 Paris Agreement was instrumental in affirming the commitment to a low carbon society of 170 countries. India was a signatory to the Paris agreement. While low carbon may not ostensibly consider biodiversity, actions on one feed off the other. The EU High Level Expert Group on Sustainable Finance has recognised the biodiversity as one of the areas requiring urgent attention.

In India, there have already existed extensive constitutional provisions to promote conservation and sustainable use of natural resources and the importance of forests and wildlife conservation is assuming increased importance.⁴ The National Action Plan on Climate Change (NAPCC), which is implemented through eight National Missions has strong focus on Biodiversity conservation. Further, Biodiversity conservation and planned afforestation are stated adaptation and mitigation strategies, respectively, in India's INDCs.

¹ Stephen Polansky, Christopher Costello and Andrew Solow (2005), *The Economics of Biodiversity*, Handbook of Environmental Economics, Volume 3, edited by K. G. Maler and J. R. Vincent.

² Biodiversity and business risk, A briefing paper for participants engaged in biodiversity related discussions at the World Economic Forum Davos-Klosters Annual Meeting, Prepared by PricewaterhouseCoopers for the World Economic Forum, January 2010.

³ *The Economics of Ecosystems and Biodiversity (TEEB), Cost of Policy Inaction Report*, 2008.

⁴ See GIZ (2014), "The Economics of Ecosystems and Biodiversity India Initiative", Interim Report, for details.

India being a signatory to the Convention on Biological diversity (CBD)⁵ is also expected to achieve targets according to a timeline. Achieving these targets will require considering resources to be spent towards biodiversity. A preliminary estimate suggests that at least USD 2.5 trillion (at 2014-15 prices) will be required for meeting India's climate change actions between now and 2030 though strategy-wise finance needs are not available.

A useful schema to categorize the various mechanisms that are being used to promote sustainable use of biodiversity was provided by Bayon, Lovnik and Veening (2000)⁶. These include policy instruments such as taxes and subsidies that protect biodiversity because it is a public good, or to correct negative externalities from the exploitation of ecosystems. A third category of policy instrument aims to facilitate the flow of private finance into conservation. The Global Biodiversity Outlook 3 (released by the UN in 2010)⁷ for example, also emphasized on the need for greater use of market incentives to minimize unsustainable resource use.

In India, currently, a majority of biodiversity conservation and management is through initiatives that support biodiversity as a public good through Budget support, supplemented by ODA, Civil Society, CSR etc.⁸ Government financial sources or CSR investments, however, will not be sufficient to meet the estimated funding requirement. A large amount of private capital needs to be mobilized. It, therefore, becomes important to understand the mechanisms through which private capital may be steered towards biodiversity conservation and sustainable activities in general.

In this paper we focus on how private capital may be channeled into activities that conserve biodiversity. We study three related issues. We evaluate the *mechanisms for financing the environment* in general. This includes a discussion of the financing through the recognition of risks, as well as direct financing. We then turn our attention to the *current status of financing for biodiversity*. This includes a discussion of the instruments as well as the projects that are financed by such instruments. We present the constraints that inhibit financing of biodiversity. Finally we present some *suggestions on policy design for improving private financing of biodiversity* in India. With this analysis, we propose to lay the foundation

⁵ <https://www.cbd.int/information/parties.shtml>

⁶ Ricardo Bayon and J. Steven Lovnik and Wouter J. Veening (2000), "Financing Biodiversity Conservation", Sustainable Development Department, Technical Paper Series, Inter-American Development Bank.

⁷ UN CBD 'Global Biodiversity Outlook' (2010) www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf

⁸ NIPFP (2017).

to formulating policy recommendations that can play an important role in mainstreaming finance for biodiversity.

2. Finance for environmental sustainability

The traditional view among financial investors has been that what is good for the environment is not necessarily good for business. As a result, it has been difficult to attract funding for businesses that focus on environmental sustainability. However, over the last decade, there have been three developments that call for a change in the status quo:

1. **Recognition of risks:** There is a growing recognition that all businesses face risks from the environment. These may be physical risks, that may come from direct damage to property due to environmental factors, or these may also be liability risk, that may arise from who will be held responsible for any disaster from the environment. There may be businesses that have high impacts on the ecosystem (such as mining, construction, oil and gas), as well as businesses that are dependent on biodiversity such as agriculture, fisheries, tourism. As the WEF Report (2010) points out, primary industries such as extractives, forestry, farming and fishing are affected most broadly but no sector escapes untouched by some form of biodiversity risk.⁹ Financial Institutions that are not positioned to identify which companies are most at risk can be exposed to increased risk for default (credit activities), lower investment returns (investment portfolios) or an increase in insurance claims (insurance activities).¹⁰
2. **Direct finance:** There has been a proliferation of *impact investing* where investors care about ESG (environment-social-governance) goals and are keen to move beyond the financial returns metric as the only measure of performance. In certain segments, such as the organic food industry, there is a realization that businesses that are good for the environment can also be a commercial opportunity. From a portfolio optimization perspective as well, the "natural resources" asset class has exhibited lower correlation to traditional asset classes, making it an attractive investment vehicle.¹¹

⁹ Biodiversity and business risk, A briefing paper for participants engaged in biodiversity related discussions at the World Economic Forum Davos-Klosters Annual Meeting, Prepared by Pricewaterhouse Coopers for the World Economic Forum, January 2010.

¹⁰ https://cmsdata.iucn.org/downloads/ivo_bb_report.pdf

¹¹ Levin, Ethan and Paul von Steenberg (2017), Making the case for Natural Resources Investing. Available at <https://www.commonfund.org/news-research/blog/post-natural-resources-investing/>

3. **Adoption of the 2030 agenda for sustainable finance:** The focus on sustainable finance has also increased since the adoption of the 2030 Agenda for Sustainable Development, and the agreements reached in December 2015, at the Paris Climate Summit. For these reasons, the interest in *sustainable or green finance* has been on the rise. This represents the positive shift in transition towards sustainability through the financial sector.

In the last decade or so a significant progress has been made towards identifying the necessary building blocks which would help shape this transition; and towards raising awareness and mobilizing support for coordinated and concerted efforts from various public, private and international actors in the green finance space. There is a long way to go, and the speed at which this will move forward will depend on the resolve of various actors involved. We begin this section by describing the key players in the market for green finance, and then describe the market for green bonds. We then describe the other examples of private sector participation in green finance with a special focus on biodiversity, and follow that up with developments in India.

2.1 Green finance: Key actors and their roles

The market for green finance has several stakeholders that influence the fund flow, and deployment. The following actors play an important role.

State: In any financial market, it is the state and the various regulators that shape the “rules of the game”. The government sets the broad agenda through targets and policy frameworks. Regulators often nudge (and sometimes mandate) regulated entities to invest resources in particular sectors, or recognise risk and returns in a manner that takes into account the impact of the environment. In India, the Central and State governments, and financial regulators such as the *Reserve Bank of India* (RBI), *Securities and Exchange Board of India* (SEBI), the *Insurance Regulatory and Development Authority of India* (IRDAI) and the *Pension Fund Regulatory and Development Authority* (PFRDA) all have a role to play in bringing biodiversity finance center-stage.

Financial institutions: The most important lenders in any economy, and especially in a bank-dominated financial economy such as that of India, are the banks followed by the Non-Banking Finance Companies (NBFCs). These institutions make important decisions about the allocation of capital and can shape how resources flow into various activities on the ground.

An example of commitment to green finance by financial institutions includes Bank of America's (BoA) US\$20 billion initiative in 2007, and further increased to US\$125 billion to support the growth of environmentally sustainable business activity to address global climate change.¹² In India, several institutions have become active investors in the green bonds space (See Section 2.3).

Investors: Investors in the space of green finance are usually institutional investors such as pension funds, asset management companies, venture capital and angel investors all of whom may have specific ESG mandates and may be interested in investing in specific projects that have huge environmental externalities. Even if investors do not have specific ESG mandates, there may be an interest in investing in the “natural resources/environmental asset class” for portfolio optimisation reasons.

International institutions: International financial institutions play an important role in channeling finance into environmental issues. For example, institutions such as the African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter-American Development Bank, World Bank Group (referred to as the MDBs), and the International Monetary Fund have all been committed to help mobilize the resources to meet the Sustainable Development Goals (SDGs).¹³

Firms: A key player in this market are firms themselves whose business may rest on environmental conservation or who may undertake initiatives for environmental conservation either for cost reasons, or as part of a “Corporate Social Responsibility” mandate. An example is the global mining company, Rio Tinto, which has recognised its impact on biodiversity and the sensitivities of its projects for communities, investors and governments among others. With this understanding it launched a biodiversity strategy in 2004, aiming to achieve Net Positive Impact (NPI) in areas of operations. Other examples in

¹²<https://newsroom.bankofamerica.com/press-releases/environment/bank-america-announces-industry-leading-125-billion-environmental>

¹³<http://www.worldbank.org/en/news/press-release/2015/07/10/international-financial-institutions-400-billion-sustainable-development-goals>

India include efforts by Hindustan Lever, Ambuja Cements and others to reduce their biodiversity footprint, and invest in supply chains that do so.¹⁴

2.2 Market for green finance

The current market for conservation finance which is estimated to have a potential of USD 200-400 billion consists predominantly of simple debt and equity funds because of their familiarity to investors, and also because they enable project and cash flow aggregation into one common financial vehicle.¹⁵ Table 1 shows the asset classes and instruments that are currently in use.

Table 1: Finance vehicles

Asset Class	Instrument	Characteristic
Debt	Direct loan	Specific project
	Bonds	Raise funds overall
	Credit enhancement	Address specific risks
Hybrid	Debt/Equity fund	Several projects under one fund
Equity	Private Equity	Direct investments in companies
Grants		Specific projects with no repayments.

Source: Reproduced from Credit Suisse AG and McKinsey Center for Business and Environment (2016)

The most popular of the instruments have been *green bonds*. In a green bond, the issuer publicly commits to using the capital that is being raised to fund "green" projects. These have usually included those relating to renewable energy, and emission reductions. Green bonds

¹⁴ For example, Ambuja Cements is the first cement company in India to be assured 'water positive'. They have a risk matrix and monitoring system in place to monitor changes in biodiversity conditions. They not only restore and reuse mined outlands, but also integrate biodiversity post-closure stage. They have a risk matrix used to prioritize financial investment in biodiversity conservation efforts.

¹⁵ Credit Suisse AG and McKinsey Center for Business and Environment (2016), "Conservation Finance From Niche to Mainstream: The Building of an Institutional Asset Class"

typically carry a lower interest rate than the loans offered by the commercial banks and have 5-10 years maturity. Proceeds are raised for specific green projects, but repayment is tied to the issuer, not the success of the projects -- this implies that green bonds are often less risky than conventional bonds.

The green bond market began around 2007, and has grown by a compound growth rate of 50%. As of 2017, the global issuance of green bonds stood at USD 120-130 billion.¹⁶ Despite such a rise, it represents only 0.1% of the total global market for debt securities, and continues to be dominated by ESG investors.

Banks continue to play an important role not only in terms of traditional lending but also in a range of intermediary functions and in their role as investors. Direct loans provide access to capital to biodiversity businesses. Sometimes these are provided at a concessionary rate to SMEs that may be good for the environment. Despite these efforts, more needs to be done to attract private capital to support the transition to a sustainable economy. The European Banks Federation has made several recommendations on what needs to be done for promoting Green finance in the economy that include developing a set of minimum standards and disclosure frameworks on green finance, and improvements in regulatory structures that may lead to greater green financing.¹⁷

2.3 Key investment opportunities and some examples of biodiversity finance

While there have been developments in green finance, most of these have not focused on biodiversity related activities. In this section we describe the activities and investment opportunities within the biodiversity sector, and provide examples of financing vehicles.

A biodiversity business is generally defined as:

¹⁶ Wim Bartels and Lars Kurznack and Laure Briaut (2016), mainstreaming the green bond market: Pathways towards common standards. Report commissioned to KPMG Sustainability by the French World Wide Fund for Nature ("WWF France") and WWF offices around the world

¹⁷ European Bank Federation Report: Towards a Green Finance Framework, 28 September, 2017. Available at <https://www.ebf.eu/ebf-media-centre/towards-a-green-finance-framework/>

“commercial enterprise aimed at generating profit while conserving biodiversity, using biological resources sustainably and sharing the benefits arising from this use equitably”¹⁸

Biodiversity businesses that can be financed are divided into five broad areas: agriculture, fisheries and aquaculture, forestry, non-timber forest products and ecosystem services. According to Rayment and McNeil (2014), there are four kinds of investment opportunities in this space.¹⁹

- *Certified goods and services*: Citizens across the world, especially in the developed markets, are willing to pay a premium for products that have been certified to be environmentally friendly, or organic. The market for such products may be large, as customers in emerging economies such as India and China also start becoming conscious of their environmental footprint and be more willing to pay a premium for such products. If customers can be satisfied with the quality and certainty of the environmental characteristics of the products, then this may be a very good investment opportunity.
- *Biodiversity offsets and habitat banking*: These are conservation activities that businesses take to compensate for development impacts elsewhere. The goal here is to achieve a “no net loss” of biodiversity and ecosystem services. In the UK, for example, the Ecosystem Markets Task force has identified that offsets have high potential to mobilize private sector funds towards investment in ecological networks and nature protection.
- *Green infrastructure*: Projects related to green infrastructure involve a strategic use of natural systems in urban and infrastructure planning to secure a range of ecosystem service benefits simultaneously. Activities such as planting trees in cities to mitigate heat, or develop bankside habitats for flood-water management would count as green infrastructure projects. Another example is the “Green Roofs Project” carried out by the

¹⁸ Bishop, J., Kapila, S., Hicks, F., Mitchell, P. and Vorhies, F. (2008). Building Biodiversity Business. Shell International Limited and the International Union for Conservation of Nature: London, UK, and Gland, Switzerland. Available at: <https://portals.iucn.org/library/sites/library/files/documents/2008-002.pdf>

¹⁹ Matt Rayment and David McNeil (2014). Final Report, “B@B Workstream 3: Access to Finance and Innovative Financing Mechanisms”, ICF International, 31 October, 2014. Available at: <http://ec.europa.eu/environment/biodiversity/business/assets/pdf/b-at-b-platform-finance-workstream-final-report.pdf>

European Federation of Green Roof Associations that promotes and finances the installation of green roofs as a form of “green infrastructure”.

- *Payments for ecosystem services (PES) and bio-carbon markets:* These are incentives offered to landowners and farmers in exchange for managing land to provide ecological services. The global market for PES is surging - it is estimated that over 550 PES programs are active worldwide, in both developed and developing countries, with US\$36-42 billion in annual transactions.²⁰

As an example of biodiversity finance, the government of Ghana roped in private financing for biodiversity by signing a lease agreement with a private development company, AIKAN Capital, to transform an Achimota Forest Reserve (which is a large patch of woodland) into an eco-park, known as Accra Eco Park. This has paved a way for restoring conservation activities at forest reserves and turning them into lush green eco-parks.

In another example, the Sabah Government in Malaysia has initiated a project that enables private sector companies working in Malaysia or sourcing products from the country to help restore and protect the existing rainforests in Malaysia. The Government assigned conservation rights (license to issue biodiversity certificates) for a period of 50 years to Malua Biobank. The bank is a multimillion dollar investment from the Eco-Products Fund, which is jointly managed by New Forests and Equator LLC, committing private equity of up to US \$10mn to manage the Malua Forest Reserve (MFR) over the next 6 years. More detailed case studies are provided in the Appendix 1.

These examples involve *partnerships between the government and private companies to engage in projects with positive impact on biodiversity*. This suggests that governments will have to play a critical role in creating a policy environment for attracting private capital into natural resource management.

²⁰ J. Salzman, G. Bennett, N. Carroll, A. Goldstein & M. Jenkins (2018), “The global status and trends of Payments for Ecosystem Services, *Nature Sustainability*, 1, pp: 136-144. Available at: https://www.nature.com/articles/s41893-018-0033-0?WT.mc_id=COM_NSustain_1803_Salzman

2.4 Green finance in India

The Indian economy is growing rapidly, and efforts have been made to complement economic instruments for conservation and sustainable use of natural resources. According to more recent estimates, the country needs about USD 4.5 trillion in infrastructure funding by 2040. Of this, nearly USD 200 billion will be required to generate 175GW renewable energy by 2022; USD 7.7 billion for intra-city metro rail networks; USD 667 billion for electric vehicles programme; and affordable green housing will need about USD 1 trillion.²¹

Traditionally the main source of financing would have been the Development Financial Institutions (DFIs). But these institutions today face capacity constraints to scale-up existing programs. Their experience is also limited to small and medium size projects. The Non-Bank Finance Companies (NBFCs) have played a smaller role in lending for green finance in India relative to the DFIs, and most of their green lending has been to the renewable energy sector. There has been some innovations in green lending by microfinance institutions (MFIs) but these are also restricted to the clean energy space.²²

India has been raising funds through green bonds - almost USD 6 billion have been raised so far. About 62% of the green bond proceeds have been allocated to renewable energy projects, followed by the low carbon transport sector and low carbon buildings accounting for 17.5% and 14% of the proceeds, respectively. Water and waste management projects account for 2.2%.²³ Box 2 provides details on issuances by entities based in India.

²¹ Kaku Nakhate (2018), "Building India's green finance ecosystem", LiveMint, 20th June. <https://www.livemint.com/Opinion/IDGSpHG4X82xsefy8OjYOP/Building-Indias-green-finance-ecosystem.html>

²² Sanjoy Sanyal and Frederik Elsinger (2016), Enabling SME access to finance for sustainable consumption and production in Asia: An overview of finance trends and barriers in India, adelphi-SWITCH ASIA. http://www.switch-asia.eu/fileadmin/user_upload/Publications/2016/Green_Finance_Study_-_2016_-_India.pdf

²³ Climate Bonds Initiative India update

Box 2: Green bond issuances by Indian entities

Yes Bank: raised USD 160 million via 10 year green bonds; USD 49 million through a rupee denominated bond on the London Stock Exchange; 7 year green infrastructure bonds (Rs.330 crore) in 2016 for a Dutch development bank on a private placement basis.

Axis Bank: raised USD 500 million (through Senior Unsecured Notes due 2021) at the London Stock Exchange in 2016.

IDBI Bank: raised USD 350 million via a five year Reg S Green Bond issue at a fixed coupon of 4.25 per cent at the Singapore Stock Exchange.

NTPC: listed the world's first Indian green masala bond and first masala bond by a quasi-sovereign issuer on the London Stock Exchange. The listing raised INR 20 billion.

From an institutional perspective as well, the regulators in India have started making progress towards improving green finance.

Box 3: Institutional Developments on Green Finance in India

The Reserve Bank of India: Formulated the 2007 Corporate Social Responsibility, Sustainable Development and Non-Financial Reporting guidelines for commercial banks. Is in the process of formulating a road map for green banking in India by looking into various aspects of green finance.

The Securities and Exchange Board of India (SEBI): issued disclosure requirements for the issuing and listing of green debt securities.

The Federation of Indian Chambers of Commerce & Industry (FICCI): has set up a Green Bond Markets Development Council to bring together senior representatives from the industry.

The Companies Act, 2013 has mandated companies to invest in Corporate Social Responsibility (CSR) initiatives which include environmentally sustainable activities.

The Reserve Bank of India (RBI): As early as 2007, the Reserve Bank of India had come out with guidelines for “Corporate Social Responsibility, Sustainable Development and Non Financial Reporting” in consultation with public and private sector banks in India. These were voluntary and meant as guidance to all commercial banks. More recently, however, the RBI is in the process of formulating a road map for green banking in India by looking into various aspects of green finance.

The Securities and Exchange Board of India (SEBI): In India, SEBI (Issue and Listing of Debt Securities) Regulations, 2008 (ILDS) govern the public issuance and listing of debt securities. In May, 2017, SEBI issued a circular on public issue and listing of green debt securities as well

as privately placed green debt securities that should be followed in addition to the ILDS regulations.²⁴

The Federation of Indian Chambers of Commerce & Industry (FICCI): has set up a Green Bond Markets Development Council to bring together senior representatives from the industry. The aim of the council is to propose solutions towards the development of a green bonds market in India and enable capital market flows into clean energy.²⁵

3. What ails biodiversity finance?

While green finance has been on the rise, the same cannot be said of finance specifically for biodiversity. There is a need to understand what shapes the incentives of all the players and whether policy efforts cause distortions in these incentives that may be the root cause of low funds into green finance in the first place. In this section we analyse the problems in biodiversity finance.

3.1 Externalities

Ecosystem services such as clean air, water, mitigation of natural disturbances, waste decomposition, maintenance of soil fertility, pollination provide huge positive externalities for human societies. As an example, a wetland may provide flood control, absorbing high waters and gradually releasing water over time. It may also filter and retain nutrients and pollutants thereby providing cleaner water downstream. Research has shown that increasing the number of species in a system tended to increase system productivity.²⁶

Degradation of ecosystems results in significant impact on an economy through its every day effects on access to water, food, clean air, health, labour productivity. For example, research on Indian manufacturing has shown that output decreases at high temperatures by 1-3 percent per degree celsius owing to a decrease in productivity of labour.²⁷

²⁴ https://www.bseindia.com/downloads/whtsnew/file/SEBI%20Cir_Green_Debt_Securities.pdf

²⁵ <https://www.climatebonds.net/2016/10/mumbai-india-green-bonds-council-holds-first-meeting-new-group-convened-ficci-and-climate>

²⁶ Tilman D, Wedin D, Knops J (1996) Productivity and sustainability influenced by biodiversity in grassland ecosystems. *Nature* 379: 718–720; Naeem et. al. (1994), Empirical evidence that declining species diversity may alter the performance of terrestrial ecosystems. *Philosophical Transactions: Biological Systems*, 347(1321).

²⁷ Sudarshan, Anand and Meenu Tewari 2016, The economic impacts of temperature on industrial productivity: Evidence from Indian manufacturing. Available at <https://www.econstor.eu/handle/10419/176296>

Environmental degradation also affects economies through the increasing occurrence of natural disasters that cause much damage and destruction. The National Oceanic and Atmospheric Administration (NOAA) has reported that the average amount of extreme weather events exceeding USD 1 billion each in the last five years has doubled since 1980. As an example of damage, an unprecedented heatwave in Moscow in 2010 is estimated to have cost almost 1% of Russia's GDP.²⁸ India is particularly vulnerable to natural disasters, especially flood risks, owing to rapid urbanisation.²⁹

As global warming increases, and the risks of extreme weather conditions goes up, they will have adverse implications for businesses. It is hard to not see the impact of environmental factors on commercial viability of firms, and consequently on credit worthiness of borrowers and the balance sheet of lenders. For example, natural disasters can have huge consequences for banks who have large exposures in the impacted areas. These events also have dramatic consequences for the insurance sector. In fact, the UN-backed Economics of Environment and Biodiversity (TEEB) initiative, has estimated the annual cost of biodiversity loss at between USD 2 - 4.5 trillion, representing approximately 7.5% of global GDP.³⁰

One of the largest market failures in biodiversity finance is the lack of internalization of such costs. From the point of view of a commercial business, it does not internalize the costs of harm to biodiversity through their activities. As a result traditional businesses always appear to be yielding better returns to investors. From the investor's perspective environmental risks appear long term and do not get factored into potential default rates.

Solving this externality first requires a valuation of natural capital so that it begins to get reflected in the market price. This is difficult to do as it is hard to conceptualise an ecosystem production system and actually measure the contribution of the ecosystem to economic outputs. Businesses themselves will get impacted by environmental degradation, and need to include these effects in their cost-benefit analysis before undertaking economic

²⁸ <https://www.dw.com/en/heat-wave-could-cost-russia-almost-1-percent-of-gdp/a-5887442>

²⁹ <https://www.livemint.com/Politics/DgqDMAedJKYw3lttuMHGMN/India-at-highest-flood-risk-with-urban-expansion-analysis-s.html>

³⁰ The Economics of Ecosystems and Biodiversity for Business (2010) <http://www.teebweb.org/Portals/25/Documents/TEEB%20for%20Business/TEEB%20for%20Bus%20Exec%20English.pdf>

activity.³¹ Financial institutions will have to adhere to “green guidelines and standards” for lending, and investment decisions, to be able to correctly evaluate the associated risks.

3.2 Search costs

There exists a search problem between biodiversity related projects and investors with investible funds. It is costly to track and evaluate investable opportunities. Given the relative novelty of this sector, project developers are not able to show a track record in developing cash-flow generating projects. On the other side of the transaction, investors also are unable to move beyond the narrow investability criteria and fail to structure and develop vehicles with different risk-return profiles.³²

3.3 Information asymmetry

A key market failure in the biodiversity space is that of information asymmetry. There is a lack of clarity about whether a particular activity is “Green”, or “Beneficial for Biodiversity”. As pointed out by a KPMG Report in 2016, the market for green bonds is

“...still too diversified which makes it more burdensome and complex to develop standards effectively, with many different types of issuers, many potential categories of eligible projects, and a wide variety of related criteria and potential measures for the environmental impact of the bond...”

This implies that the market for biodiversity is not standardised - there are too many players doing different things and measuring impact in different manner. If investors are uncertain about whether particular activities are indeed relevant from a biodiversity viewpoint, or are unable to measure the impact of their investments, then entities may find it difficult to invest in projects.³³ This issue was raised by the EU High Level Expert Group on Sustainable Finance which recommended that the European Commission set up a shared EU classification system for sustainable activities.³⁴

³¹ Niyati Dangi and Rakesh Shejwal (2017), "Valuing Natural Capital: Applying the Natural Capital Protocol", YES Global Institute.

³² Credit Suisse AG and McKinsey Center for Business and Environment (2016), "Conservation Finance From Niche to Mainstream: The Building of an Institutional Asset Class"

³³ Wim Bartels and Lars Kurznack and Laure Briaut (2016), mainstreaming the green bond market: Pathways towards common standards. Report commissioned to KPMG Sustainability by the French World Wide Fund for Nature ("WWF France") and WWF offices around the world

³⁴ EU High Level Expert Group on Sustainable Finance: Financing a Sustainable European Economy, Final Report, 2018.

3.4 Scalability

One of the key problems in the biodiversity space is the difficulty in scalability of projects. Reports suggest that only a few projects are scalable beyond a USD 5 million threshold. Scalability also becomes a problem when projects require training a large number of people, for example, in agriculture or fisheries to give up standard practices and move to organic farming. As a result, the project size often remains small, and is therefore, uneconomical from the perspective of large institutional investors.³⁵

4. Way forward

In this section we outline the steps the government may take to promote a market for biodiversity finance.

4.1 Clear policy objectives and strategy

One of the first tasks for policy is to lay down clear objectives on biodiversity. As has been seen from the Latin American and the Caribbean experience, *“people can mobilize when targets are clear and can be tracked transparently in the near term.”*³⁶ For example the state of Acre in Brazil made a deep commitment to preserving the forest, and clearly recognised that the state had an eminently forest-linked economy. This then led the way to *the use of planning tools such as ecological economic zoning through a broad-based consultation and participation process resulting in maps that help regulate land use and classify regions for targeted support programs.* The government of Mexico also designed conservation policies and programs that included territorial planning at regional and local level, voluntary conservation areas, certified forest areas, wildlife management reserves and mainstreamed conservation goals in public policies and programs.

Policy uncertainties get reduced when governments and regulators are able to send strategic policy signals and frameworks, thereby accelerating the development of green finance. The setting of clear policy goals also provides the impetus to build networks for

³⁵ OCED (2016), "Green financing: Challenges and opportunities in the transition to a clean and climate-resilient economy", OCED Journal: Financial Market Trends, Volume 2016/2.

³⁶ Expanding Financing for Biodiversity Conservation: Experiences from Latin America and the Caribbean, Environment & Water Resources, Occasional Paper Series, The World Bank, 2012. Available at: <http://www.worldbank.org/content/dam/Worldbank/document/LAC-Biodiversity-Finance.pdf>

sharing information and knowledge on the linkages between environmental factors and financial risks.

India is particularly weak on this front. Despite having a NAPCC and more recently INDCs, it has not been able to formulate a coherent national strategy on climate finance. As a result, there is a lack of coordination in accessing climate finance and delivering it to priority interventions.³⁷ India being a signatory to the CBD has an obligation to formulate a biodiversity conservation action plan and implement the same according to a timeline. Accordingly, a National Biodiversity Action Plan (NBAP) has been prepared. Implementation of NBAP is largely through the budgetary support to the central Ministry of Environment Forests and Climate Change (MoEF&CC) which is supplemented by schemes and programs of ministries such as Agriculture and Animal Husbandry, Fisheries, Tourism, Water. Although, the Biodiversity Act, 2002 in India has provisions for setting up of a biodiversity fund, a dedicated biodiversity fund or a biodiversity finance policy – key to identifying periodic and continuous finance needs and where and how to raise it from – is yet to be put in place. A recent report (Roy, Pandey, and Gupta, 2017)³⁸ on mapping biodiversity finance in India shows that it is highly fragmented, lacks a clear policy and a road map. Multiple institutions are involved in directing finance with no systematic tracking. The report also noted that the NBAP is an undersold policy document even in the government space with no stated intent for formal engagement with the private sector either in the action plan or its implementation strategy.

The government of India needs to set out their policy goals and broad strategy for biodiversity finance. The strategy should take into account the level of preparedness in various sectors, and identify those that still need subsidies as opposed to those that will take off with a few regulatory fixes. The strategy should contain exact policy objectives, the targets that need to be achieved, and the time-frames involved. In India, although economic instruments have been implemented successfully in coal and vehicular transport sectors to level the playing field between “polluting” and “non-polluting” industries; the government should show a greater commitment to internalising the externalities through instruments

³⁷ Dave Steinbach, Adarsh Varma, Prima Madan, Ashutosh Pandey, Pallavee Khanna, Smita Nakhoda (2014), Enhancing India’s readiness to access and deliver international climate finance, RICARDO-AEA. Commissioned by the Shakti Sustainable Energy Foundation.

³⁸ Rathin Roy, Rita Pandey, Manish Gupta and others (2017), Mapping National and International Flow of Funds for Conservation of Biodiversity with Special Focus on Maharashtra Province in India, NIPFP, New Delhi, India.

such as taxes, cess, setting up trading mechanisms for further financial flows. There is also need for systematically identifying and prioritising opportunities for private finance, potential for synergistic approaches and action for addressing policy and institutional bottlenecks.

4.2 Consistent policy making

It is possible that government policies in other sectors inhibit its goals on biodiversity. For example, it may be that policies in the agriculture sector, such as fertilizer subsidies, promote the use of chemical fertilizers that damage the soil and also increase the pesticide content in the final produce, thus causing harmful effects on biodiversity. Similarly, it is possible that the legal drafting of the Forests Acts, may hinder the development of a sustainable industry around forest produce. If there is legal and regulatory uncertainty in the treatment of certain products (for example bamboo), the industry participation will not be forthcoming. The government should follow up its policy objective on biodiversity with a review of all laws and regulations such that they are aligned with the larger policy objective.

4.3 Public private partnerships

As discussed in Section 2.3, and described in detail in Appendix 1, several of the successful initiatives at bringing private capital to the cause of biodiversity has been through *partnerships between the government and private companies*. An example of such a public private partnership is the *Atlantic Forest Fund in Brazil*, a financial and operational mechanism developed by the Brazilian Biodiversity Fund, at the request of the State Secretary of Environment. By 2010, the FMA had already invested R\$14.5 million in the state's protected areas thereby improving the financial sustainability of its existing protected areas system.³⁹ Another example, also from Brazil is the PPP Peter Lund Cave Route that aims to structure a single, singular national and international tourist track, aligning the unique natural and cultural elements of the karst region. This project is a partnership between the Secretary of State for Environment and Sustainable Development (SEMAD), Forest State Institute (IEF) and Public-Private Partnership Central Unit with a focus on the management, conservation and operation of three protected areas.⁴⁰ India should consider setting up such

³⁹ Expanding Financing for Biodiversity Conservation: Experiences from Latin America and the Caribbean, Environment & Water Resources, Occasional Paper Series, The World Bank, 2012. Available at: <http://www.worldbank.org/content/dam/Worldbank/document/LAC-Biodiversity-Finance.pdf>

⁴⁰<http://blogs.worldbank.org/ppps/environmental-conservation-tourism-and-economic-development-avant-garde-brazilian-solution-through>

public private partnerships to preserve its forests and ecosystems. These should flow from the priorities set up in the policy objectives discussed in the previous sections.

4.4 Clear policy on ECC risks

Traditionally credit risk has only been concerned with balance sheet measures. It should now take into account environmental risks as well. The impetus for this can come from regulation which should require banks and other financial institutions to explicitly acknowledge environmental risks in their decision making frameworks. A beginning has been made internationally through Basel norms already. For example, paragraph 510 of Basel III (Pillar1) requires banks to appropriately

“monitor the risk of environmental liability arising in respect of the collateral, such as the presence of toxic materials on a property.”

Critics, however, argue that these cover mainly “transaction-specific risks”, and do not constitute broader macro-prudential or portfolio-wide risks for the banks.⁴¹ However, the recognition has led several Central Banks to put in place frameworks to deal with environmental and systemic risks. An example of such an initiative are the “Environmental Risk Management Guidelines” for banks and financial institutions published by the Bangladesh Central Bank in 2011, which provides detailed technical guidance on environmental risk and its management. The Green Credit guidelines issued by the China Banking Regulatory Commission in 2012 (followed by additional guidance in subsequent years) are another example where the regulator has taken the lead in requiring banks to take an active role in considering environmental risks in their credit decisions.⁴² In 2014, Brazil’s central bank adopted a policy of encouraging banks to have environmental and social policies that are “relevant” and proportionate to their activities based on the bank’s size and position in the banking sector, and its business model.⁴³

The banking regulator in India should consider including environmental risk aspects as an integral part of the supervisory framework and consider them within the revisions of

⁴¹ Kern Alexander, Thomas Strahm and Alexandra Balmer, “Stability and Sustainability in Banking Reform: Are environmental risks missing in Basel III”. Available at <http://www.unepfi.org/fileadmin/documents/StabilitySustainability.pdf>

⁴² Barbara Kuepper, Profundo Tim Steinweg, Aidenvironment Gabriel Thoumi, 2017. Sustainable Banking Initiatives: Regulators’ Role in Halting Deforestation. China Reaction Research.

⁴³ Greening Banking Policy: In support of the G20 Green Finance Study Group. Available at http://unepinquiry.org/wp-content/uploads/2016/09/10_Greening_Banking_Policy.pdf

the assessment methodology of the Basel Core Principles for Effective Bank Supervision.⁴⁴ It could require banks to assess all “material risks” in its capital assessment process, and incorporate forward-looking models that incorporate environmental impacts (both positive and negative) into their stress-testing frameworks.⁴⁵

4.5 Improve measurement

To be able to utilize economic instruments for conservation, there is a need to have a good basis of policy relevant valuations of biodiversity natural resources and ecosystem services. To scale valuation efforts to national level, sustained long term efforts are needed to develop more rigorous methods, identify data needs and ways to collect the needed information.⁴⁶

The measurement of financial flows into biodiversity would also help in evaluating the impact on biodiversity: and help in assessing the progress that has been made on the “greening” of the financial system. For example, the China Bank Association has made progress towards measuring the volume and efficiency of green loans, while the Central Bank in Turkey has initiated the development of a reporting template.⁴⁷ Such an initiative may be considered by the Indian regulators as well.

Better measurement of biodiversity exposures and risks would enable investors to understand: the exposure of various portfolios to environmental risks, and help them design strategies that are better aligned towards their ESG goals. This would increase the confidence of market participants when they participate in biodiversity related activities.

4.6 Improving financial disclosures

Closely tied to the notion of measurement is that of improving disclosures, as they directly feed into the goals of measurement. A key component of incorporating ECC risks is the requirement that business and investors make financial disclosures that not only focus

⁴⁴ European Banks Association, 2017. Green Finance Framework. Available at <https://www.ebf.eu/wp-content/uploads/2017/09/Geen-finance-complete.pdf>

⁴⁵ See supra 27

⁴⁶ The Economics of Ecosystems and Biodiversity India Initiative, Interim Report Working Document, Ministry of Environment, Forests and Climate Change, Government of India

⁴⁷ UN Environment, 2017. Green Finance: Progress Report. The Inquiry into the Design of a Sustainable Financial System, United Nations Environment Programme (UN Environment).

on the short and medium term, but also on the long term. This is important from the perspective of evaluating the ECC risks appropriately.

4.7 Capacity building in financial institutions

A key player in channeling finance into biodiversity related activities will be the financial institutions themselves. There needs to be an effort to develop capacity within the DFIs and banks to be able to increase coverage of biodiversity related activities and develop bankable projects to attract investment. GCF provides for Pipeline development support which can be informed by the priorities set out in the country work programme (Mehta, Goodman and Pandey (2015 a)). This may be done by developing internal capacity through creation of groups at the institution level to focus on biodiversity related activities, and also creating mechanisms to coordinate with research institutions to develop bankable projects.⁴⁸ Mehta, Goodman and Pandey (2015 b) identifies a number of specific barriers to private sector investment in mitigation and adaptation projects that the private Sector Facility (PSF) of the GCF is designed to address. A key barrier, among others, is inadequate capacity of DFIs. NABARD⁴⁹ and SIDBI became the accredited entities in India from public sector in the context of GCF⁵⁰. The private sector entities nominated by the government are YES Bank, IDFC Bank and IL&FS Environmental Services. Other institutions should be encouraged to go down this path, and develop downstream projects in the area of biodiversity. The study recommends that the Fund may support capacity building of DFIs by funding local initiatives and supporting the expansion of institutions that lead efforts to address climate change -- in order to increase the coverage of climate related activities and to develop bankable projects to leverage further investment.

⁴⁸ Dave Steinbach, Adarsh Varma, Prima Madan, Ashutosh Pandey, Pallavee Khanna, Smita Nakhooda (2014), Enhancing India's readiness to access and deliver international climate finance, RICARDO-AEA.

⁴⁹ NABARD and SIDBI have been accredited as Direct Access Entity (DAE) of Green Climate Fund for channelizing resources under this Fund : http://timesofindia.indiatimes.com/articleshow/63247678.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

⁵⁰ So far, one project from India on "Installation of Ground Water Recharge System" in Odisha has recently been approved by the GCF for \$34 million. Another proposal on coastal areas has already been submitted to the GCF Secretariat and several more projects are in the pipeline.

Mehta, Goodman and Pandey (2015 a), Green Climate Fund: Roadmap for Indian financial institutions, Verco, United Kingdom.

Mehta, Goodman and Pandey (2015 b), Readiness activities to help India access and best use climate finance, including the Green Climate Fund, Verco, United Kingdom.

4.8 Capacity Building for Biodiversity Businesses

Capacity building for biodiversity based businesses is equally important as both the financial sector and businesses have a role to play in developing a pipeline of projects. There are a number of general activities that governments and others can undertake to support the creation and development of biodiversity-based businesses. Entrepreneurs face similar challenges as they attempt to start-up, develop and expand their biodiversity based businesses. It therefore makes sense to help them learn from each others' experiences and capitalize on the mistakes and achievements of others.

Recognizing the need for capacity building and training, the Bio Trade Initiative (see www.biotrade.org) promoted by UNCTAD, with the support of the CBD Secretariat and other organizations, represents an integrated approach to stimulating investment and trade in biological resources.

The costs and benefits of such incentives need to be considered in the Indian context. It is possible that if prudential requirements on lending to green assets are reduced, this might incentivise finance into such activities.

5. Conclusion

This paper set out to examine whether present voluntary efforts of financial institutions will suffice towards biodiversity conservation and efficient use of natural resources, or clear policy and regulatory signals are needed.

Towards this end the paper focuses on how private capital may be channeled into activities that conserve biodiversity. We study three related issues: (i) evaluate the mechanisms for financing the environment in general, (ii) the current status of financing for biodiversity and (iii) the constraints that inhibit financing of biodiversity. Finally, we present some suggestions on policy design for improving private financing of biodiversity in India. With this analysis, we propose to lay the foundation to formulating policy recommendations that can play an important role in mainstreaming finance for biodiversity.

The private environmental and biodiversity finance in India faces significant institutional and technical barriers. These include, among others, a lack of public policy clarity and engagement with the private sector on biodiversity policy framework; many technical and knowledge barriers leading to a lack of a regular pipeline of bankable projects; lack of appreciation by the finance actors of the services provided by the biodiversity and

ecosystems services and that the increasing pressures on these pose significant risks to businesses; absence of formal forums and institutional mechanisms to engage with the private sector.

For mobilizing private finance in biodiversity space in India a number of measures needs to be taken:

The government of India needs to set out their policy goals and broad strategy for biodiversity finance. The strategy should take into account the level of preparedness in various sectors, and identify those that still need subsidies as opposed to those that will take off with a few regulatory fixes.

It would be necessary to increase transparency about the definition of green finance. Voluntary principles and guidelines for green finance need to be established and monitored for all asset classes complemented by financial and regulatory incentives.

Business and investors should be required to report and disclose their systemic environmental, and biodiversity and natural resources risks. Better measurement of biodiversity exposures and risks would enable investors to understand the exposure of various portfolios to environmental risks, and help them design strategies that are better aligned towards their ESG goals. This would increase the confidence of market participants when they participate in biodiversity related activities.

There needs to be an effort to develop capacity within the DFIs and banks to be able to increase coverage of biodiversity related activities and develop bankable projects to attract investment.

The banking regulator in India should consider including environmental risk aspects as an integral part of the supervisory framework and consider them within the revisions of the assessment methodology of the Basel Core Principles for Effective Bank Supervision.

Appendix I: Case studies

Ecotourism

Ecotourism is defined as responsible travel to areas that conserve the environment and sustain the well-being of the local people and their culture. Ecotourism is an effective way to help safeguard a country's resources while promoting socio-economic development and empowerment of local communities. Ecotourism fills the growth of the local economy with revenues generated from it. Eco-tourism differs from tourism in the sense that usually tourism is described as a business of providing services for tourists. Tourism is not concerned about climate change, and might cause pollution, unsustainable construction destroying the ecosystem as tourism is only with an aim to earn profits.

However, even eco-tourism comes with its share of hurdles, since ecotourism entails visiting unexplored areas, it can be unsafe at times. Thus many concerned travelers opt for traditional tours in popular places that are usually safe. Also, the fact that it is expensive in nature when compared to mass tourism. As a result only the well-heeled can afford it. Moreover, eco-tourism requires trained tourist guides such that they themselves do not cause harm to the ecosystem.

An attempt has been made by the **Ghana government** to resolve such issues. Ghana with its sunny equatorial climate and fertile well-watered soils sustain an enchanting selection of wildlife, ranging from elephants to monkeys and marine turtles to crocodiles, along with hundreds of colorful birds and butterfly species.

In Feb 2016, Forestry Commission of Ghana signed a lease agreement with a **private development company, AIKAN Capital**, to transform an Achimota Forest Reserve (which is a large patch of woodland) into an eco-park, known as Accra Eco Park. The Achitoma Forest Reserve has lost around 150ha of land since its inception in 1930, as a result of urban development. The lease agreement allows AIKAN Capital to design, build and operate the facility for 10 years.

The mega development by AIKAN capital will comprise of the construction of amusement parks, orchards, arboretum, wildlife safaris, museums, eco-commercial enclaves and eco-lodges and will not affect the natural vegetation as much as possible. It will also involve a spiritual enclave to cater for spiritual/worship activities that bring more than 180,000 people annually to the Achimota Forest. High seating capacity conference rooms are also set to be

constructed outside the main forest area. The estimated cost of the project will be around \$1.2bn.

AIKAN capital will earn revenue from the **user charge** that will be charged from the tourists who come to visit the Accra Eco Park, taking a step forward for environmental conservation.⁵¹

1. Green Commodities Program

The major challenges in the production of Green commodities has been the weak organization of the smallholders producing such commodities and also the lack of property rights given to them. There existed no certification via the government to these smallholders, making their groups vulnerable and their produce susceptible to market fluctuations. Thereby, producing green commodities had little scope and held little incentive for these smallholders.

Green Commodities Program is thus a combined public and private effort to transform the commodity sector. This program aims to bring together various stakeholders of the targeted commodity sector at country level to address its structural problems. Usually these are some of the highly traded commodities with substantial social and environmental impacts. Some initiated programs are on palm oil, coffee, soy, beef and dairy.

The UNDP in this context, approached the Indonesian State and has developed a Palm Oil Platform, FoKSBI (Forum Kelapa Sawit Berkelanjutan Indonesia). The State's relationship then evolved with Indonesian Palm Oil Pledge (IPOP). The Roundtable on Sustainable Palm Oil (RSPO) has been developed to bring legality and transparency in the palm oil chain and improve livelihoods of smallholders.

Recently, the Indonesian Government has started the process of recognizing smallholders working for palm oil, by certifying them. The Indonesian Ministry of Agriculture and UNDP began the process of pilot testing the guidelines for small-holders certification, using Indonesian Sustainable Palm Oil (ISPO). In 2015, ISPO, a mandatory Government led scheme was launched to formalize the Palm Oil smallholders. This led to providing assistance such as land titles and capacity building to the smallholders. The initiative is both to help low income oil palm farmers increase their productivity and improve the sector's environmental management.

⁵¹ "Emerging Ecotourism in Ghana Makes Headway." *Oxford Business Group*, 31 Jan. 2017, oxfordbusinessgroup.com/analysis/ghana%E2%80%99s-emerging-ecotourism-segment-making-headway-wild-card

4. Biodiversity certification

Biodiversity certification is a streamlined biodiversity assessment process for areas marked for development at the strategic planning stage. The process identifies areas of high conservation value at a landscape scale. These areas can be avoided and protected while identifying areas suitable for development. The problem with such pledge to restoration and conservation by investors has been that they do not know whether their money is going through the right channel or not and whether their funds would actually be used for long term investments in conservation activities.

1. The Sabah Government in Malaysia has initiated a project that enables private sector companies working in Malaysia or sourcing products from the country to help restore and protect the existing rainforests in Malaysia. This is known as the Malua Biobank, which is a joint venture between the Malua BioBank Company (Malua Wildlife Habitat Conservation Bank Inc.) and Sabah State Government.
2. The Sabah Government that has assigned conservation rights (license to issue biodiversity certificates) for a period of 50 years to Malua Biobank. The bank is a multimillion dollar investment from the Eco-Products Fund, which is jointly managed by New Forests and Equator LLC, committing private equity of up to US \$10mn to manage the Malua Forest Reserve (MFR) over the next 6 years.

Malua Biobank that generates biodiversity conservation certificates. By purchasing certificates, buyers can make a credible long term contribution to forest conservation and agree that they do not support logging activities in forests.⁵² Further, bio-banking enables 'biodiversity credits' to be generated by landowners and developers who commit to protect biodiversity values on their land through bio-banking agreement. These credits can then be sold to philanthropic or government organizations, using the market to achieve natural resource management on private land. Revenue from the sale of credits go to covering the costs of management during the set up phase and endowing a perpetual charitable trust.

Buyers and sellers of credits are free to negotiate the credit price, however on the first sale of credits, the proceeds from the sale must be sufficient to cover the Total Fund Deposit, that involves expenses associated with managing the biobank site (cost of implementing

⁵² Halley, Meril ,(2015), *Case Study on New Forest's Malua BioBank Initiative*, Industrial Agriculture and Ape Conservation

management actions, condition of vegetation, configuration of site) and other recurring costs (such as annual reporting fee, insurance, land rates).

Moreover, TZ1 Limited is a leading provider of registry services to the voluntary carbon market and has been selected as the global registry for the Malua Biobank's Biodiversity Conservation Certificates. It provides a secure, online facility enabling efficient issuance, housing, ownership transfer and retirement of Biodiversity Conservation Certificates. TZ1 is the first biodiversity registry of its kind in the world.

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